

**REMARKS**

The Examiner is thanked for the due consideration given the application.a

Upon entry of this amendment, claims 1-7 and 9-18 are pending in the application. Claim 17 has been withdrawn from consideration. By this amendment claim 8 is canceled and its subject matter is generally incorporated into claim 1.

Entry of this amendment under 37 CFR §1.116 is respectfully requested because it cancels a claim and places the application in condition for allowance.

Also, it is respectfully noted that the claims of the present invention are newly rejected over the reference of HIRATA et al. (U.S. Patent 6,106,589). As is noted in MPEP 706.07, before final rejection is in order a clear issue should be developed between the examiner and applicant. To bring the prosecution to as speedy conclusion as possible and at the same time to deal justly by both the applicant and the public, the invention as disclosed and claimed should be thoroughly searched in the first action and the references fully applied.

In this case, HIRATA et al. is newly applied and there has therefore been no clear issue developed in regard to the patentability of the present invention over this

reference. The application should therefore be under non-final rejection, and the instant paper should be entered.

**Rejection Over HIRATA et al.**

Claims 1-16 and 18 have been rejected under 35 USC §103(a) as being unpatentable over HIRATA et al. This rejection is respectfully traversed.

The present invention pertains to a method allowing the removal of metals in ionic form in solution in water or aqueous effluents in which a metal completely or partially coated with hydrogen is utilized. This method aims at the elimination of these metal ions in the aqueous effluents from industry and for the treatment of water for human consumption.

Instant claim 1 of the present invention sets forth:

*1. A method for reducing a content of contaminating metals in ionic form present in aqueous effluents, comprising:*

*(a) providing an aqueous effluent comprising at least a metal  $M_i$  in ionic form;*

*(b) treating the aqueous effluent with at least a metal  $M_h$  completely or partially coated with hydrogen during the treating the metal ion(s)  $M_i$ ; and*

*(c) recovering an aqueous effluent from which the metal  $M_i$  has been eliminated or its content reduced.*

The Official Action assert that HIRATA et al. disclose a method for reducing the content of contaminating metals in ionic form present in aqueous effluents, the method including the steps of providing an aqueous effluent including at least a metal in ionic form, placing the aqueous effluent in contact with at least a metal that is "obviously" completely or partially coated with hydrogen before and during the placing in contact with the metal ions; and recovering the aqueous effluent.

It is clear that Hirata et al. disclose a method for reducing the content of contaminating metals in ionic form present in aqueous effluents. The Official Action refers to column 7, lines 4-10 of HIRATA et al, which discusses a treatment with sodium hydrosulfite which allows preparing the metal ion-treating agent.

In this step (step c) the metal ion-treating agent of step a (that is to say the DDA [1,4-dihydro-9,10-dihydroxyanthracene] supported on activated carbon) is mixed with sodium hydrosulfite and tetraamine nickel, that is to say nickel ion. Sodium hydrosulfite allows reducing nickel ion in nickel metal which precipitate on the surface of the metal ion-treating agent of step a.

Step d of HIRATA et al. describes the treatment of a palladium plating waste water with the nickel-

supported metal ion-treating agent prepared in step c. The compound prepared in step c is packed into a glass column and the waste water is subjected to passing through the column. However, when the compound prepared in step c is placed in a water solution, hydrogen atoms that may be present, adsorbed on the surface of the nickel move in solution and nickel as well.

Indeed, nickel metal without a coating of hydrogen is not stable in aqueous solution and nickel ions move in solution. This is the phenomenon of cementation; wherein the more oxidizable metal (nickel) is oxidized (to nickel ions) while the less oxidizable metal (palladium) is deposited as a metal.

Contrary to the assertion in the Official Action, the metal (nickel) in Hirata is not coated with hydrogen during the treating with the metal ions. If some hydrogen is present at the beginning this hydrogen is rapidly eliminated and cementation occurs.

In contrast, an objective of the present invention is to avoid this phenomenon of cementation (see paragraph [0009] of the specification). This is provided by treating the effluent with a metal having and keeping a coating of hydrogen.

Claim 1 of the present invention has thus been amended to better set forth that step b is a step of treating the aqueous effluent with at least a metal  $M_h$  completely or partially coated with hydrogen during the treatment of the metal ion(s)  $M_i$ . Since step b is a step of treating an effluent with a metal  $M_h$  completely or partially coated with hydrogen during the treatment, it is understood that throughout the duration of the treatment the metal  $M_h$  is always coated with hydrogen, for example, by passing a current of hydrogen (paragraph [0027] of the specification), a pressure of hydrogen (examples) or the use of Raney nickel.

HIRATA et al. do not disclose or infer keeping a hydrogen coating during the treatment of the aqueous effluent, which improves the capacity of the method and avoids a high level of nickel passing into the effluent.

One of ordinary skill and creativity would fail to produce a claimed embodiment of the present invention from a knowledge of the teachings of HIRATA et al.

A *prima facie* case of unpatentability has thus not been made.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

**Conclusion**

It is believed that the rejection has been overcome, obviated or rendered moot and no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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